2017 Commodity Flow Survey (CFS)
Public Use File (PUF)
Data Users Guide

Technical Documentation
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1. Introduction

This document describes the Public Use File (PUF) created for the 2017 Commodity Flow Survey (CFS). In 2012, the PUF was referred to as a "Public Use Microdata (PUM) File"; terminology has been changed to be more consistent with Census Bureau Standards. This users guide provides a brief description of the CFS and the differences between the CFS data used to create the published estimates and the records available in the PUF. This document also explains how to create estimates and measures of sampling variability from the PUF data. For a complete description of the CFS and access to the published tables and the survey methodology document, visit the CFS website at: www.census.gov/programs-surveys/cfs.html. This is only the second time the PUF has been produced and comments from users regarding the content and usefulness of this product are appreciated. Contact the CFS staff by e-mail (ERD.CFS@census.gov) or phone (301-763-2108) with your comments.

2. CFS Background

The Commodity Flow Survey (CFS) is a joint effort by the Bureau of Transportation Statistics (BTS), U.S. Department of Transportation and the U.S. Census Bureau, U.S. Department of Commerce. The survey is the primary source of national and state-level data on domestic freight shipments by establishments in mining, manufacturing, wholesale, auxiliaries, and selected retail and services trade industries located in the 50 states and the District of Columbia[1]. The survey produces estimates on the type, origin and destination, value, weight, modes of transportation, distance shipped, and ton-miles of commodities shipped. The CFS is conducted every five years as part of the Economic Census. It provides a modal picture of national freight flows, and represents the only publicly available source of commodity flow data for the highway mode. The CFS was conducted in 1993, 1997, 2002, 2007, 2012 and most recently in 2017.

For special tabulations of the CFS data, contact the CFS staff by e-mail (ERD.CFS@census.gov) or phone (301-763-2108) to discuss cost estimates and exact specifications for the type and format of the data requested.

3. PUF Contents

The PUF includes 20 variables for all usable shipment records[2] collected by the CFS – a total of

[1] Establishments classified in transportation (other than freight trucking and warehousing), construction, and most retail and services industries are excluded. These sectors have several million establishments in total and very few of these establishments are likely to have significant shipping activity. For more information on out-of-scope industries, see "Industry Coverage" in the *2017 CFS Survey Methodology* at www.census.gov/programs-surveys/cfs/technical-documentation/methodology/methodology-2017.html

[2] A *usable* shipment is one that contributes to tabulations. A shipment may be deemed *unusable* if a respondent fails to provide the value, weight, commodity, or destination for a sampled shipment and this missing data item could not be imputed or otherwise obtained.

5,978,523 shipments from approximately 60,000 responding establishments. The information included on each shipment record is:

- Shipment Origin
  - State
  - Metropolitan Area
- Shipment Destination (in US)
  - State
  - Metropolitan Area
- NAICS industry classification of the shipper
- Quarter in 2017 in which the shipment was made
- Type of commodity
- Mode of transportation
- The value of the shipment (dollars)
- The weight of the shipment (pounds)
- The great circle distance between the shipment origin and US destination (in miles)
- The routed distance between the shipment origin and US destination (in miles)[3]
- Whether or not the shipment used temperature control during transportation
- Whether or not the shipment was an export
- If an export, the final export destination code
- Hazardous material code
- Shipment tabulation weighting factor – used to expand PUF numeric shipment data (e.g., shipment value, shipment weight, shipment distance) to represent the total population of in-scope U.S. shipments in 2017; for more information on how to apply the tabulation weighting factor to these numeric data, see section 5 below. This shipment tabulation weighting factor is the product of seven different component weights and disclosure avoidance noise factors. A description of how the component weights were calculated can be found in the *2017 CFS Survey Methodology*, linked in footnote 1, above. For this PUF, further adjustments were made to the weighting factor and are described in section 4 below.

  Note: The shipment tabulation weighting factor (WGT_FACTOR) assigned to a shipment is also an estimate of the number of shipments of the type represented by that PUF shipment record [4]. Summing the tabulation weighting factors of all PUF shipments going from, say, Ohio to Texas will produce an estimate of the U.S. total number of shipments travelling that route. However, the survey respondent determines what constitutes a shipment - there are no weight, value, volume, or other limits on the size of a shipment. The only requirement is that it must have a single destination and require one trip. Single shipments may have multiple pieces or go by multiple vehicles, such as unit trains or truck convoys, but only one destination. See the 2017 CFS instruction guide at www.census.gov/programs-surveys/cfs/technical-documentation/questionnaires.html for more information on the guidance given to CFS respondents.

The complete layout and description of the variables of the PUF is provided in Appendix A.

[3] Note that multiple shipments traveling together on the same vehicle (truck, airplane, etc.) will each have an origin-to-destination distance assigned to them even though the carrier travels that distance only once.

[4] Note: A small number of shipments have weighting factors < 1. This may occur when the tabulated revenue data from the 2017 Economic Census is less than the CFS weighted shipment value (computed using all prior weighting factors). See the *2017 CFS Survey Methodology*, linked in footnote 1, for a description of the weighting procedure.

4. Differences Between Published CFS Estimates and PUF Tabulations

To protect the confidentiality of CFS respondents, the CFS uses noise-infusion when producing estimates of shipment value and shipment weight. Details relating to this disclosure avoidance technique, along with information on the survey coverage, sampling, mileage calculation, and estimation methodologies may be found in the *CFS Survey Methodology* webpage, linked in footnote 1, above. The Census Bureau has reviewed this data product for unauthorized disclosure of confidential information and has approved the disclosure avoidance practices applied. (Approval ID: CBDRB-FY20-296).

For this PUF, additional measures were taken to protect the confidentiality of the data of the CFS respondents. These additional measures to protect confidentiality were:

- Additional noise was applied to the shipment value and weight.
- Extremely large shipment values and weights were top-coded.
- Extremely large shipment weighting factors were truncated to 786,400.

  Note: In the three cases above, adjustments were also made to other variables so that the product of shipment value (or shipment weight) and the weighting factor for each shipment after these changes is approximately equal to the same product before the changes.

- Shipment value, weight and distance quantities were rounded to the nearest integer. Weighting factors were rounded to the nearest tenth.
- For approximately 16,500 shipments, the detail provided for the origin, commodity, and/or mode of transportation was reduced or collapsed. For example, a shipment origin might have been changed from the Chicago, IL CFS Area to just Illinois.

While implementing these measures, certain desirable properties in the original data were maintained to the extent possible. These were:

- Estimates produced from the PUF would be close to the published ones.
- The value-to-weight ratio of individual shipments was maintained.
- When the level of detail provided had to be reduced (or collapsed), commodity and mode detail were reduced before geographic detail. Detail and collapsed geography, commodity and mode levels can be found in appendices A-1, A-3 and A-4, respectively.

Tables of U.S.-level estimates by origin state, commodity, and mode comparing published CFS data to tabulations created using the PUF are shown in Appendix B.

Estimates produced using the 2017 CFS PUF have the same issues with comparability to prior surveys as the published 2017 estimates. Data users should be cautious when comparing any 2017 estimates with 2012 or earlier CFS estimates. See the 'Comparability of Estimates' section of the *2017 CFS Survey Methodology*, linked in footnote 1, for a discussion of these comparability issues.

5. How to Estimate Totals and Average Miles per Shipment with the PUF

a. Total value, total tonnage, and total ton-miles

Important note: To make estimates of total value, one must multiply the value of the shipment (SHIPMT_VALUE) by the shipment tabulation weighting factor (WGT_FACTOR), before summing.

This same rule applies to making estimates of total tonnage and total ton-miles. The formulas showing this method are given below.

An estimate of the total value (in dollars) for a given domain is given by

$$Total\ value\ for\ a\ given\ domain = \sum_{i=1}^{n} (WGT\_FACTOR_i \times SHIPMT\_VALUE_i),$$

where WGT_FACTOR is the shipment tabulation weighting factor, $SHIPMT\_VALUE$ is the value of the shipment, i indexes the shipments in the given domain, and n is the number of shipments in the given domain.

For example, if we want to estimate the total value of shipments originating in Maryland, then we compute the quantity above using shipments where ORIG_STATE = 24. **Note that by domain, we do not only mean a geographical domain. For example, if we want to estimate the total value of shipments of basic chemicals, then we compute the quantity above using shipments where SCTG = 20.**

Estimates of the total tonnage and total ton-miles can be made analogously. An estimate of the total tonnage for a given domain is given by

$$Total\ tonnage\ for\ a\ given\ domain = \sum_{i=1}^{n} [WGT\_FACTOR_i \times (SHIPMT\_WGHT_i/2000)],$$

where WGT_FACTOR is the shipment tabulation weighting factor, $SHIPMT\_WGHT$ is the weight of the shipment, i indexes the shipments in the given domain, and n is the number of shipments in the given domain. We divide $SHIPMT\_WGHT$ by 2000 since $SHIPMT\_WGHT$ is in pounds.

An estimate of the total ton-miles for a given domain is given by

$$Total\ ton\text{-}miles\ for\ a\ given\ domain =$$

$$\sum_{i=1}^{n} [WGT\_FACTOR_i \times (SHIPMT\_WGHT_i/2000) \times SHIPMT\_DIST\_ROUTED_i],$$

where WGT_FACTOR is the shipment tabulation weighting factor, $SHIPMT\_WGHT$ is the weight of the shipment, $SHIPMT\_DIST\_ROUTED$ is the routed distance between the shipment origin and destination, i indexes the shipments in the given domain, and n is the number of shipments in the given domain. We divide $SHIPMT\_WGHT$ by 2000 since $SHIPMT\_WGHT$ is in pounds.

b. Average miles per shipment

Important note: Similar to the important note above for estimates of total value, total tonnage, and total ton-miles, one must use the shipment tabulation weighting factor (WGT_FACTOR) in making estimates of average miles per shipment, as given by the formula below.

An estimate of the average miles per shipment for a given domain is given by

$$Average\ miles\ per\ shipment\ for\ a\ given\ domain = \frac{\sum_{i=1}^{n}(WGT\_FACTOR_i \times SHIPMT\_DIST\_ROUTED_i)}{\sum_{i=1}^{n} WGT\_FACTOR_i},$$

where WGT_FACTOR is the shipment tabulation weighting factor, $SHIPMT\_DIST\_ROUTED$ is the routed distance between the shipment origin and destination, i indexes the shipments in the given domain, and n is the number of shipments in the given domain.

Note: The tables in Appendix B (in the columns under "PUF Tabulations – Weighted") contain estimates for Modes, Commodities, and Origin States produced using these formulas.

6. How to Estimate Coefficients of Variation (CVs) with the PUF

a. Motivation and basic idea of the generalized variance function (GVF) method

We developed a generalized variance function (GVF) method to allow users to compute coefficients of variation (CVs) of estimates made with the PUF that contain noise introduced during the disclosure avoidance procedure. This is necessary because, due to confidentiality concerns, we are not able to place the random group information on the PUF that would allow users to compute CVs by the random groups method[5].

The basic idea of the GVF method is to determine a function (which is called the GVF) that expresses the CV in terms of quantities that can be computed with the PUF, and unknown parameters that can be estimated. This function is then incorporated into a linear regression model, in which the CV computed by the random groups method is the outcome variable, the quantities that can be computed with the PUF are the covariates, and the unknown parameters that can be estimated are the regression coefficients. The regression coefficients are estimated by the Census Bureau, and supplied to the users. Then, with the quantities that can be computed with the PUF, and with the estimates of the regression coefficients, users can compute CVs. Tables including the CVs computed with the GVF alongside the published CVs derived using the random groups method are included in Appendix C.

b. Computing CVs for total value, total tonnage, and total ton-miles

For estimates of total value, total tonnage, and total ton-miles, the GVF is

$$\ln(CV_{total}) = a + b\ln(n) + c\ (\ln(n))^2,$$

where ln is the natural log (i.e., log to the base e), CV_{total} is the CV (expressed as a percent) of the estimate of the total, n is the number of shipments that were used to compute the estimate, and $a, b,$ and c are regression coefficients found in table 1 below.

Therefore, in order to compute the CV of an estimate of a total, compute:

$$CV_{total} = e^{a+b\ln(n)+c\ (\ln(n))^2}.$$

Note: Choose a, b, and c from Table 1 below, depending on which type of total is being estimated.

[5] The random groups method is used to compute the CVs of the estimates that are released to the public.

c. Example of computing the CV of an estimate of total value

Suppose we want to compute the CV of the estimate of the total value of shipments originating in Maryland. The number of shipments originating in Maryland is 91,174, and we need to choose $a, b,$ and c from the first row of Table 1 below. So the CV is:

$$CV_{total} = e^{3.955 - 0.033\ln(91,174) - 0.016\,(\ln(91,174))^2} = 4.44\% \,.$$

d. Computing CVs for average miles per shipment (AMPS)

For estimates of average miles per shipment, the GVF is

$$\ln\left(CV_{average\ miles\ per\ shipment}\right) = a + b\ln(n) + c\ln(AMPS)\,,$$

where ln is the natural log (i.e., log to the base e), $CV_{average\ miles\ per\ shipment}$ is the CV (expressed as a percent) of the estimate of average miles per shipment, n is the number of shipments that were used to compute the estimate, $AMPS$ is the estimate of average miles per shipment, and $a, b,$ and c are regression coefficients.

Therefore, in order to compute the CV of the estimate of average miles per shipment, compute:

$$CV_{total} = e^{a+b\ln(n)+c\ln(AMPS)}\,.$$

Note: Choose a, b, and c from the last row of Table 1 below.

Table 1: Regression Coefficients of the GVFs

Estimate	a	b	c
Total value	3.955	-0.033	-0.016
Total tonnage	3.815	0.045	-0.017
Total ton-miles	3.958	0.020	-0.015
Average miles per shipment	5.262	-0.084	-0.398

Note: The tables in Appendix C (in the columns under "PUF GVF CVs") contain CVs produced using these formulas for the estimates in the tables in Appendix B.

Suggested Citation: U.S. Department of Transportation, Bureau of Transportation Statistics; and, U.S. Department of Commerce, U.S. Census Bureau. (2020-08). *2017 Commodity Flow Survey (CFS) Public Use File (PUF) Data Users Guide.* Technical Documentation. U.S. Census Bureau, Washington, DC. Available at https:// www2.census.gov/programs-surveys/cfs/datasets/2017/cfs_2017_puf_users_guide.pdf.

2017 CFS Public Use File Data Dictionary

Field	Description	Valid Values	Type	Length
SHIPMT_ID	Shipment identifier	0000001 – 5,978,523	CHAR	7
ORIG_STATE	FIPS state code of shipment origin	01 - 56	CHAR	2
ORIG_MA	Metro area of shipment origin	*See Note (1)*	CHAR	5
ORIG_CFS_AREA	CFS Area of shipment origin	Concatenation of ORIG_STATE and ORIG_MA (ex: 24-12580)	CHAR	8
DEST_STATE	FIPS state code of shipment destination	01-56	CHAR	2
DEST_MA	Metro area of shipment destination	*See Note (1)*	CHAR	5
DEST_CFS_AREA	CFS Area of shipment destination	Concatenation of DEST_STATE and DEST_MA (ex: 01-142)	CHAR	8
NAICS	Industry classification of shipper	*See Note (2)*	CHAR	6
QUARTER	Quarter of 2017 in which the shipment occurred	1, 2, 3, 4	CHAR	1
SCTG	2-digit SCTG commodity code of the shipment	*See Note (3)*	CHAR	5
MODE	Mode of transportation of the shipment	*See Note (4)*	CHAR	3
SHIPMT_VALUE	Value of the shipment in dollars	0 – 9,999,999,999	NUM	
SHIPMT_WGHT	Weight of the shipment in pounds	0 – 9,999,999,999	NUM	
SHIPMT_DIST_GC	Great circle distance between shipment origin and destination (in miles)	0 - 99,999	NUM	
SHIPMT_DIST_ROUTED	Routed distance between shipment origin and destination (in miles)	0 - 99,999	NUM	
TEMP_CNTL_YN	Temperature controlled shipment - Yes or No	Y, N	CHAR	1
EXPORT_YN	Export shipment - Yes or No	Y, N	CHAR	1
EXPORT_CNTRY	Export final destination	C = Canada M = Mexico E = Europe & Africa A = Asia & Oceania S = Rest of the Americas N = Not an export	CHAR	1
HAZMAT	Hazardous material (HAZMAT) code	P = Class 3.0 Hazmat (flammable liquids) H = Other Hazmat N = Not Hazmat	CHAR	1
WGT_FACTOR	Shipment tabulation weighting factor. (*This factor is also an estimate of the total number of shipments represented by the PUF shipment.*)	0 – 786,400.0	NUM	

Notes:

(1) See Appendix A-1 for the descriptions of the 132 valid CFS areas

(2) See Appendix A-2 for the descriptions of the 45 valid NAICS codes

(3) See Appendix A-3 for the descriptions of the 43 valid SCTG commodity codes

(4) See Appendix A-4 for the descriptions of the 20 valid Mode codes

CFS Areas

ORIG_MA DEST_MA	ORIG_STATE DEST_STATE	ORIG_CFS_AREA DEST_CFS_AREA	*MA Type*	*Description*
104	36	36-104	C	Albany-Schenectady, NY CFS Area
122	13	13-122	C	Atlanta-Athens-Clarke County-Sandy Springs, GA CFS Area
142	01	01-142	C	Birmingham-Hoover-Talladega, AL CFS Area
148	25	25-148	C	Boston-Worcester-Providence, MA-RI-NH-CT CFS Area (MA Part)
	33	33-148	C	Boston-Worcester-Providence, MA-RI-NH-CT CFS Area (NH Part)
	44	44-148	C	Boston-Worcester-Providence, MA-RI-NH-CT CFS Area (RI Part)
160	36	36-160	C	Buffalo-Cheektowaga, NY CFS Area
172	37	37-172	C	Charlotte-Concord, NC-SC CFS Area (NC Part)
176	17	17-176	C	Chicago-Naperville, IL-IN-WI CFS Area (IL Part)
	18	18-176	C	Chicago-Naperville, IL-IN-WI CFS Area (IN Part)
178	21	21-178	C	Cincinnati-Wilmington-Maysville, OH-KY-IN CFS Area (KY Part)
	39	39-178	C	Cincinnati-Wilmington-Maysville, OH-KY-IN CFS Area (OH Part)
184	39	39-184	C	Cleveland-Akron-Canton, OH CFS Area
198	39	39-198	C	Columbus-Marion-Zanesville, OH CFS Area
204	48	48-204	C	Corpus Christi-Kingsville-Alice, TX CFS Area
206	48	48-206	C	Dallas-Fort Worth, TX-OK CFS Area (TX Part)
212	39	39-212	C	Dayton-Springfield-Sidney, OH CFS Area
216	08	08-216	C	Denver-Aurora, CO CFS Area
220	26	26-220	C	Detroit-Warren-Ann Arbor, MI CFS Area
238	48	48-238	C	El Paso-Las Cruces, TX-NM CFS Area (TX Part)
258	18	18-258	C	Fort Wayne-Huntington-Auburn, IN CFS Area
260	06	06-260	C	Fresno-Madera, CA CFS Area
266	26	26-266	C	Grand Rapids-Wyoming-Muskegon, MI CFS Area
268	37	37-268	C	Greensboro--Winston-Salem--High Point, NC CFS Area
273	45	45-273	C	Greenville-Spartanburg-Anderson, SC CFS Area
288	48	48-288	C	Houston-The Woodlands, TX CFS Area
294	18	18-294	C	Indianapolis-Carmel-Muncie, IN CFS Area
300	12	12-300	C	Jacksonville-St. Marys-Palatka, FL-GA CFS Area (FL Part)
312	20	20-312	C	Kansas City-Overland Park-Kansas City, MO-KS CFS Area (KS Part)
	29	29-312	C	Kansas City-Overland Park-Kansas City, MO-KS CFS Area (MO Part)
314	47	47-314	C	Knoxville-Morristown-Sevierville, TN CFS Area
324	22	22-324	C	Lake Charles-Jennings, LA CFS Area
332	32	32-332	C	Las Vegas-Henderson, NV-AZ CFS Area (NV Part)
348	06	06-348	C	Los Angeles-Long Beach, CA CFS Area
350	21	21-350	C	Louisville/Jefferson County-Elizabethtown-Madison, KY-IN CFS Area (KY Part)
368	47	47-368	C	Memphis-Forrest City, TN-MS-AR CFS Area (TN Part)
370	12	12-370	C	Miami-Fort Lauderdale-Port St. Lucie, FL CFS Area
376	55	55-376	C	Milwaukee-Racine-Waukesha, WI CFS Area
378	27	27-378	C	Minneapolis-St. Paul, MN-WI CFS Area (MN Part)
380	01	01-380	C	Mobile-Daphne-Fairhope, AL CFS Area
400	47	47-400	C	Nashville-Davidson--Murfreesboro, TN CFS Area
406	22	22-406	C	New Orleans-Metairie-Hammond, LA-MS CFS Area (LA Part)
408	09	09-408	C	New York-Newark, NY-NJ-CT-PA CFS Area (CT Part)
	34	34-408	C	New York-Newark, NY-NJ-CT-PA CFS Area (NJ Part)
	36	36-408	C	New York-Newark, NY-NJ-CT-PA CFS Area (NY Part)
	42	42-408	C	New York-Newark, NY-NJ-CT-PA CFS Area (PA Part)
416	40	40-416	C	Oklahoma City-Shawnee, OK CFS Area

ORIG_MA DEST_MA	ORIG_STATE DEST_STATE	ORIG_CFS_AREA DEST_CFS_AREA	*MA Type*	*Description*
420	31	31-420	C	Omaha-Council Bluffs-Fremont, NE-IA CFS Area (NE Part)
422	12	12-422	C	Orlando-Deltona-Daytona Beach, FL CFS Area
428	10	10-428	C	Philadelphia-Reading-Camden, PA-NJ-DE-MD CFS Area (DE Part)
	34	34-428	C	Philadelphia-Reading-Camden, PA-NJ-DE-MD CFS Area (NJ Part)
	42	42-428	C	Philadelphia-Reading-Camden, PA-NJ-DE-MD CFS Area (PA Part)
430	42	42-430	C	Pittsburgh-New Castle-Weirton, PA-OH-WV CFS Area (PA Part)
440	41	41-440	C	Portland-Vancouver-Salem, OR-WA CFS Area (OR Part)
	53	53-440	C	Portland-Vancouver-Salem, OR-WA CFS Area (WA Part)
450	37	37-450	C	Raleigh-Durham-Chapel Hill, NC CFS Area
464	36	36-464	C	Rochester-Batavia-Seneca Falls, NY CFS Area
472	06	06-472	C	Sacramento-Roseville, CA CFS Area
476	17	17-476	C	St. Louis-St. Charles-Farmington, MO-IL CFS Area (IL Part)
	29	29-476	C	St. Louis-St. Charles-Farmington, MO-IL CFS Area (MO Part)
482	49	49-482	C	Salt Lake City-Provo-Orem, UT CFS Area
488	06	06-488	C	San Jose-San Francisco-Oakland, CA CFS Area
496	13	13-496	C	Savannah-Hinesville-Statesboro, GA CFS Area
500	53	53-500	C	Seattle-Tacoma, WA CFS Area
536	04	04-536	C	Tucson-Nogales, AZ CFS Area
538	40	40-538	C	Tulsa-Muskogee-Bartlesville, OK CFS Area
545	51	51-545	C	Virginia Beach-Norfolk, VA-NC CFS Area (VA Part)
556	20	20-556	C	Wichita-Arkansas City-Winfield, KS CFS Area
12420	48	48-12420	M	Austin-Round Rock, TX CFS Area
12580	24	24-12580	M	Baltimore-Columbia-Towson, MD CFS Area
12940	22	22-12940	M	Baton Rouge, LA CFS Area
13140	48	48-13140	M	Beaumont-Port Arthur, TX CFS Area
16700	45	45-16700	M	Charleston-North Charleston, SC CFS Area
25540	09	09-25540	M	Hartford-West Hartford-East Hartford, CT CFS Area
29700	48	48-29700	M	Laredo, TX CFS Area
38060	04	04-38060	M	Phoenix-Mesa-Scottsdale, AZ CFS Area
40060	51	51-40060	M	Richmond, VA CFS Area
41700	48	48-41700	M	San Antonio-New Braunfels, TX CFS Area
41740	06	06-41740	M	San Diego-Carlsbad, CA CFS Area
45300	12	12-45300	M	Tampa-St. Petersburg-Clearwater, FL CFS Area
46520	15	15-46520	M	Urban Honolulu, HI CFS Area
47900	11	11-47900	M	Washington-Arlington-Alexandria, DC-VA-MD-WV CFS Area (DC Part)
	24	24-47900	M	Washington-Arlington-Alexandria, DC-VA-MD-WV CFS Area (MD Part)
	51	51-47900	M	Washington-Arlington-Alexandria, DC-VA-MD-WV CFS Area (VA Part)
99999	01	01-99999	R	Remainder of Alabama CFS Area
99999	02	02-99999	R	Remainder of Alaska CFS Area
99999	04	04-99999	R	Remainder of Arizona CFS Area
99999	05	05-99999	R	Remainder of Arkansas CFS Area
99999	06	06-99999	R	Remainder of California CFS Area
99999	08	08-99999	R	Remainder of Colorado CFS Area
99999	09	09-99999	R	Remainder of Connecticut CFS Area
99999	10	10-99999	R	Remainder of Delaware CFS Area
99999	12	12-99999	R	Remainder of Florida CFS Area
99999	13	13-99999	R	Remainder of Georgia CFS Area
99999	15	15-99999	R	Remainder of Hawaii CFS Area
99999	16	16-99999	R	Remainder of Idaho CFS Area

ORIG_MA DEST_MA	ORIG_STATE DEST_STATE	ORIG_CFS_AREA DEST_CFS_AREA	*MA Type*	*Description*
99999	17	17-99999	R	Remainder of Illinois CFS Area
99999	18	18-99999	R	Remainder of Indiana CFS Area
99999	19	19-99999	R	Remainder of Iowa CFS Area
99999	20	20-99999	R	Remainder of Kansas CFS Area
99999	21	21-99999	R	Remainder of Kentucky CFS Area
99999	22	22-99999	R	Remainder of Louisiana CFS Area
99999	23	23-99999	R	Remainder of Maine CFS Area
99999	24	24-99999	R	Remainder of Maryland CFS Area
99999	25	25-99999	R	Remainder of Massachusetts CFS Area
99999	26	26-99999	R	Remainder of Michigan CFS Area
99999	27	27-99999	R	Remainder of Minnesota CFS Area
99999	28	28-99999	R	Remainder of Mississippi CFS Area
99999	29	29-99999	R	Remainder of Missouri CFS Area
99999	30	30-99999	R	Remainder of Montana CFS Area
99999	31	31-99999	R	Remainder of Nebraska CFS Area
99999	32	32-99999	R	Remainder of Nevada CFS Area
99999	33	33-99999	R	Remainder of New Hampshire CFS Area
99999	35	35-99999	R	Remainder of New Mexico CFS Area
99999	36	36-99999	R	Remainder of New York CFS Area
99999	37	37-99999	R	Remainder of North Carolina CFS Area
99999	38	38-99999	R	Remainder of North Dakota CFS Area
99999	39	39-99999	R	Remainder of Ohio CFS Area
99999	40	40-99999	R	Remainder of Oklahoma CFS Area
99999	41	41-99999	R	Remainder of Oregon CFS Area
99999	42	42-99999	R	Remainder of Pennsylvania CFS Area
99999	45	45-99999	R	Remainder of South Carolina CFS Area
99999	46	46-99999	R	Remainder of South Dakota CFS Area
99999	47	47-99999	R	Remainder of Tennessee CFS Area
99999	48	48-99999	R	Remainder of Texas CFS Area
99999	49	49-99999	R	Remainder of Utah CFS Area
99999	50	50-99999	R	Remainder of Vermont CFS Area
99999	51	51-99999	R	Remainder of Virginia CFS Area
99999	53	53-99999	R	Remainder of Washington CFS Area
99999	54	54-99999	R	Remainder of West Virginia CFS Area
99999	55	55-99999	R	Remainder of Wisconsin CFS Area
99999	56	56-99999	R	Remainder of Wyoming CFS Area
The following codes only apply to shipment origin variables				
00000	NN	NN-00000	R	Origin metro area suppressed (where NN is a valid ORIG_STATE code)
00000	00	00-00000	R	Origin state and metro area suppressed

MA Type: C = Combined statistical area (CSA) type CFS Area, M = Metropolitan statistical area (MSA) type CFS Area, R = Remainder of state type CFS Area

NOTE: For some shipments, it was necessary to suppress the CFS area of the shipment origin while still providing the state. For example, if a shipment originating in the Chicago CFS Area (IL part) had to be (partially) suppressed, the ORIG_MA would be set to 00000 and the origin CFS Area would be 17-00000 (somewhere in IL).

NAICS (North American Industry Classification System) Codes

NAICS	Description
212	Mining (except oil and gas)
311	Food manufacturing
312	Beverage and tobacco product manufacturing
313	Textile mills
314	Textile product mills
315	Apparel manufacturing
316	Leather and allied product manufacturing
321	Wood product manufacturing
322	Paper manufacturing
323	Printing and related support activities
324	Petroleum and coal products manufacturing
325	Chemical manufacturing
326	Plastics and rubber products manufacturing
327	Nonmetallic mineral product manufacturing
331	Primary metal manufacturing
332	Fabricated metal product manufacturing
333	Machinery manufacturing
334	Computer and electronic product manufacturing
335	Electrical equipment, appliance, and component manufacturing
336	Transportation equipment manufacturing
337	Furniture and related product manufacturing
339	Miscellaneous manufacturing
4231	Motor vehicle and parts merchant wholesalers
4232	Furniture and home furnishing merchant wholesalers
4233	Lumber and other construction materials merchant wholesalers
4234	Commercial equip. merchant wholesalers
4235	Metal and mineral (except petroleum) merchant wholesalers
4236	Electrical and electronic goods merchant wholesalers
4237	Hardware and plumbing merchant wholesalers
4238	Machinery, equipment, and supplies merchant wholesalers
4239	Miscellaneous durable goods merchant wholesalers
4241	Paper and paper product merchant wholesalers
4242	Drugs and druggists' sundries merchant wholesalers
4243	Apparel, piece goods, and notions merchant wholesalers
4244	Grocery and related product merchant wholesalers
4245	Farm product raw material merchant wholesalers
4246	Chemical and allied products merchant wholesalers
4247	Petroleum and petroleum products merchant wholesalers
4248	Beer, wine, and distilled alcoholic beverage merchant wholesalers
4249	Miscellaneous nondurable goods merchant wholesalers
4541	Electronic shopping and mail-order houses
45431	Fuel dealers
4931	Warehousing and storage (includes 484, Truck transportation)
5111	Newspaper, periodical, book, and directory publishers (includes 51223, Music publishers)
551114	Corporate, subsidiary, and regional managing offices

SCTG (Standard Classification of Transported Goods) Codes

SCTG	Description	SCTG Group
01	Animals and Fish (live)	01-05
02	Cereal Grains (includes seed)	
03	Agricultural Products (excludes Animal Feed, Cereal Grains, and Forage Products)	
04	Animal Feed, Eggs, Honey, and Other Products of Animal Origin	
05	Meat, Poultry, Fish, Seafood, and Their Preparations	
06	Milled Grain Products and Preparations, and Bakery Products	06-09
07	Other Prepared Foodstuffs, and Fats and Oils	
08	Alcoholic Beverages and Denatured Alcohol	
09	Tobacco Products	
10	Monumental or Building Stone	10-14
11	Natural Sands	
12	Gravel and Crushed Stone (excludes Dolomite and Slate)	
13	Other Non-Metallic Minerals not elsewhere classified	
14	Metallic Ores and Concentrates	
15	Coal	15-19
16	Crude Petroleum	
17	Gasoline, Aviation Turbine Fuel, and Ethanol (includes Kerosene, and Fuel Alcohols)	
18	Fuel Oils (includes Diesel, Bunker C, and Biodiesel)	
19	Other Coal and Petroleum Products, not elsewhere classified	
20	Basic Chemicals	20-24
21	Pharmaceutical Products	
22	Fertilizers	
23	Other Chemical Products and Preparations	
24	Plastics and Rubber	
25	Logs and Other Wood in the Rough	25-30
26	Wood Products	
27	Pulp, Newsprint, Paper, and Paperboard	
28	Paper or Paperboard Articles	
29	Printed Products	
30	Textiles, Leather, and Articles of Textiles or Leather	
31	Non-Metallic Mineral Products	31-34
32	Base Metal in Primary or Semi-Finished Forms and in Finished Basic Shapes	
33	Articles of Base Metal	
34	Machinery	
35	Electronic and Other Electrical Equipment and Components, and Office Equipment	35-38
36	Motorized and Other Vehicles (includes parts)	
37	Transportation Equipment, not elsewhere classified	
38	Precision Instruments and Apparatus	
39	Furniture, Mattresses and Mattress Supports, Lamps, Lighting Fittings, and Illuminated Signs	39-43
40	Miscellaneous Manufactured Products	
41	Waste and Scrap (excludes of agriculture or food, see 041xx)	
43	Mixed Freight	
00	Commodity code suppressed	

NOTE: For some shipments the 2-digit SCTG was replaced with the SCTG Group (for example, SCTG = “35-38”) or suppressed completely (SCTG = “00”).

SCTG = “99”, Missing Code, is not a Commodity level included in the published 2017 CFS tables, or on the 2017 PUF; this is a change from 2012. SCTG Group “43-99” has been renamed to “39-43” from 2012 to 2017.

Mode of Transportation Codes

Mode Code	Mode of transportation Description
02	*Single mode*
03	*Truck*
04	**For-hire truck**
05	**Company-owned truck**
06	**Rail**
07	*Water*
08	**Inland Water**
09	**Great Lakes**
10	**Deep Sea**
101	**Multiple Waterways**
11	**Air (incl truck & air)**
12	**Pipeline**
19	**Other mode**
13	*Multiple mode*
14	**Parcel, USPS, or courier**
20	*Non-parcel multiple mode*
15	**Truck and rail**
16	**Truck and water**
17	**Rail and water**
18	**Other multiple mode**
00	*Mode suppressed*

NOTE: The vast majority of shipments in the PUF are assigned the most detailed mode code listed in the table above (in **bold**). However, for some shipments, it was necessary to recode the Mode to a less detailed code to protect confidentiality. For example, the Mode of a shipment would be recoded from Great Lakes (09) to the less detailed code, Water (07) or even less detailed, Single Mode (02). In very rare circumstances, the Mode of a shipment was suppressed entirely (00).

The table below shows the sequential collapsing pattern used when it was not possible to retain the most detailed Mode code. Mode 20, Non-parcel multiple mode, is not a Mode level included in the published CFS tables.

Mode Collapsing Pattern

Most Detailed Mode Codes		1st Collapsing		2nd Collapsing		3rd Collapsing	
04	For-hire truck	03	Truck	02	Single mode	00	Mode suppressed
05	Company-owned truck						
06	Rail						
08	Inland Water	07	Water				
09	Great Lakes						
10	Deep Sea						
101	Multiple Waterways						
11	Air (including truck & air)						
12	Pipeline						
19	Other (single) mode						
14	Parcel, USPS, or courier			13	Multiple mode		
15	Truck and rail	20	Non-parcel multiple mode				
16	Truck and water						
17	Rail and water						
18	Other multiple mode						

Comparison of Published Estimates and Estimates Produced from the Public Use File
for Selected Shipment Characteristics

Table B1: Comparison with Weighted PUF Tabulations and Published CFS Estimates - Mode

Mode	Number of PUF Records	PUF Tabulations - Weighted				Published Estimates			
		VALUE ($)	WGHT (tons)	Ton-Miles	Avg miles/ shipment	Shipment Value ($)	Shipment Weight (tons)	Ton-Miles	Avg miles/ shipment
Total	5,978,523	14,517,252,205,223	12,468,926,874	3,117,472,208,914	666	14,517,812,000,000	12,468,902,000	3,116,876,000,000	679
00	487	6,442,788,782	8,293,561	3,752,743,259	817				
02	7,031	160,836,247,732	357,814,744	95,414,215,059	903				
03	402	745,882,893	928,279	124,221,687	71				
04	2,354,704	6,964,160,682,860	5,229,645,502	1,161,290,654,663	370	6,968,184,000,000	5,232,034,000	1,162,179,000,000	369
05	1,825,760	3,427,797,234,847	3,607,946,352	164,836,645,850	46	3,430,726,000,000	3,611,300,000	164,915,000,000	45
06	26,280	219,955,368,459	1,158,747,954	774,231,447,274	567	254,209,000,000	1,251,240,000	824,763,000,000	579
07	137	19,383,989,217	44,779,272	15,267,942,183	399				
08	3,758	89,897,798,537	400,419,243	151,286,114,458	184	117,321,000,000	471,854,000	177,494,000,000	188
09	89	268,822,797	32,253,396	9,809,420,875	278	614,000,000	41,947,000	15,638,000,000	304
10	1,529	57,606,595,859	147,833,562	32,698,304,290	343	120,651,000,000	268,634,000	50,866,000,000	359
101	120	1,640,775,801	10,871,055	9,851,254,906	871	5,268,000,000	21,958,000	15,612,000,000	525
11	93,633	488,949,979,499	7,371,232	9,063,113,514	1,400	496,637,000,000	8,019,000	9,822,000,000	1,403
12	4,487	297,825,860,878	604,284,526	51,906,829,213	36	344,357,000,000	697,778,000	S	S
13	6,965	48,512,179,810	60,525,645	42,994,075,867	615				
14	1,566,194	2,116,219,042,748	37,977,652	29,844,769,702	934	2,117,135,000,000	38,008,000	29,838,000,000	953
15	36,685	325,445,871,698	438,880,945	415,179,798,971	1,176	348,047,000,000	471,398,000	443,188,000,000	1,177
16	43,929	232,008,475,800	98,101,430	44,849,462,707	819	251,439,000,000	109,861,000	51,853,000,000	784
17	2,542	31,981,073,472	124,513,179	91,717,419,924	938	43,638,000,000	143,013,000	102,715,000,000	1,075
18	2,099	11,267,788,920	5,413,215	6,180,459,934	1,474	17,490,000,000	8,224,000	9,562,000,000	1,425
19	224	2,024,954,610	81,255,702	111,300,902	1	2,095,000,000	93,634,000	128,000,000	1
20	1,468	14,280,790,004	11,070,429	7,062,013,678	1,102				

Notes to PUF Tabulations:

Number of PUF Records: (Unweighted) Number of PUF shipment records included in the estimate

VALUE: Summed, weighted shipment value (SHIPMT_VALUE)

WGHT: Summed, weighted shipment weight (SHIPMT_WGHT), divided by 2000 (to convert shipment weight to tons)

Ton-miles: Summed, weighted product of SHIPMT_WGHT and SHIPMT_DIST_ROUTED divided by 2000 (to convert shipment weight to tons)

Average miles/shipment: Summed, weighted shipment distance (SHIPMT_DIST_ROUTED) divided by summed WGT_FACTOR

Table B2: Comparison with Weighted PUF Tabulations and Published CFS Estimates - Commodity

SCTG	Number of PUF Records	PUF Tabulations - Weighted				Published Estimates			
		VALUE ($)	WGHT (tons)	Ton-Miles	Avg miles/ shipment	Shipment Value ($)	Shipment Weight (tons)	Ton-Miles	Avg miles/ shipment
Total	5,978,523	14,517,252,205,223	12,468,926,874	3,117,472,208,914	666	14,517,812,000,000	12,468,902,000	3,116,876,000,000	679
00	487	6,442,788,782	8,293,561	3,752,743,259	817				
01-05	1,537	17,094,043,190	65,565,342	26,987,411,200	639				
01	3,251	10,080,428,505	4,344,007	1,427,000,515	880	10,777,000,000	4,573,000	1,570,000,000	866
02	32,952	101,125,626,951	658,978,821	216,068,619,703	153	108,561,000,000	707,113,000	230,498,000,000	158
03	78,983	232,623,771,505	302,884,313	137,377,479,820	515	236,965,000,000	315,168,000	145,852,000,000	524
04	69,164	132,310,423,634	320,479,195	75,717,722,366	508	134,423,000,000	325,312,000	78,947,000,000	514
05	102,840	353,718,301,679	92,874,103	45,208,258,799	184	356,421,000,000	93,872,000	46,001,000,000	183
06-09	1,373	6,722,684,845	11,396,703	9,540,338,439	440				
06	96,356	195,988,926,530	126,903,117	50,694,248,537	187	198,051,000,000	132,818,000	56,404,000,000	187
07	263,210	603,518,501,087	525,982,750	200,489,844,996	372	606,280,000,000	530,168,000	203,307,000,000	373
08	149,793	225,370,465,491	110,309,289	26,534,510,764	191	226,894,000,000	111,861,000	27,798,000,000	195
09	16,620	79,153,187,804	4,603,710	830,049,644	1,028	79,806,000,000	4,659,000	877,000,000	1,014
10-14	1,595	7,338,712,151	56,533,786	15,176,387,258	614				
10	7,283	6,858,566,933	13,615,956	2,236,049,454	263	7,193,000,000	14,072,000	2,474,000,000	345
11	36,876	11,799,560,126	528,050,234	111,155,101,040	163	12,211,000,000	535,935,000	112,790,000,000	170
12	99,358	19,303,590,776	1,585,021,671	91,541,765,396	40	19,664,000,000	1,615,187,000	95,990,000,000	41
13	29,195	23,753,056,573	204,512,470	53,123,709,340	270	24,581,000,000	216,583,000	57,099,000,000	274
14	5,501	25,186,161,625	63,889,066	39,403,106,731	646	30,734,000,000	70,510,000	44,267,000,000	607
15-19	1,099	95,793,174,420	224,998,827	54,279,586,785	420				
15	8,076	30,472,290,421	859,075,349	471,599,497,545	73	31,673,000,000	878,235,000	483,112,000,000	74
17	57,123	702,296,759,162	1,306,260,765	126,550,440,807	43	745,954,000,000	1,388,364,000	138,279,000,000	44
18	82,126	435,964,724,950	824,077,325	59,436,454,788	36	474,617,000,000	909,140,000	79,304,000,000	36
19	155,031	245,368,711,428	505,138,551	74,753,136,448	68	258,447,000,000	547,120,000	88,371,000,000	65
20-24	2,083	18,979,821,992	21,865,814	11,977,738,114	918				
20	132,971	284,189,311,940	408,809,693	145,388,008,661	427	290,944,000,000	418,746,000	151,553,000,000	421
21	139,783	1,094,555,138,744	19,409,724	10,004,119,311	622	1,099,027,000,000	19,569,000	10,129,000,000	623
22	29,673	55,569,661,757	164,015,053	37,838,440,370	91	57,886,000,000	172,509,000	40,112,000,000	102
23	198,188	428,192,749,566	125,720,783	59,057,731,069	851	431,214,000,000	127,478,000	60,718,000,000	881
24	337,129	639,912,167,583	223,251,010	121,921,454,565	717	642,524,000,000	224,812,000	123,629,000,000	689
25-30	2,111	6,673,697,578	9,132,029	4,180,902,001	861				
25	4,637	5,050,261,109	23,827,869	4,675,815,115	140	6,508,000,000	25,637,000	5,411,000,000	138
26	209,298	219,671,854,924	318,816,963	88,007,128,135	351	220,916,000,000	322,769,000	88,755,000,000	350
27	77,724	126,354,321,243	138,088,211	82,267,902,374	264	127,501,000,000	139,603,000	83,375,000,000	267
28	110,686	147,427,642,310	79,693,895	25,313,722,173	565	148,420,000,000	80,854,000	26,305,000,000	577
29	211,566	133,338,554,810	27,760,957	11,002,994,604	468	133,862,000,000	27,940,000	11,119,000,000	480
30	305,783	509,177,074,039	39,243,901	23,854,104,222	1,061	510,486,000,000	39,813,000	24,337,000,000	1,083
31-34	1,479	12,362,587,240	14,769,059	8,557,519,407	1,188				
31	201,857	201,687,396,492	912,570,045	99,431,372,772	526	203,609,000,000	920,764,000	103,609,000,000	544
32	232,027	459,862,448,940	327,323,367	110,623,138,183	414	464,454,000,000	332,177,000	113,627,000,000	413
33	273,004	392,972,208,360	127,076,500	48,136,736,792	560	394,331,000,000	128,364,000	49,046,000,000	559
34	356,942	865,952,886,538	94,183,824	42,274,861,078	441	870,494,000,000	94,760,000	42,825,000,000	439
35-38	1,357	36,643,780,289	3,746,179	2,407,642,037	959				
35	398,144	1,133,749,645,756	56,660,364	30,760,869,878	741	1,135,570,000,000	56,855,000	31,133,000,000	783
36	303,577	1,231,935,268,580	167,800,736	65,456,486,657	474	1,244,898,000,000	170,451,000	66,873,000,000	475
37	51,563	257,966,142,983	5,661,311	3,189,273,378	920	281,929,000,000	6,515,000	3,804,000,000	918
38	154,908	381,831,135,709	7,682,886	5,404,108,106	907	384,066,000,000	7,753,000	5,493,000,000	910
39-43	1,362	7,739,925,838	10,332,650	5,300,765,685	1,332				
39	126,758	178,362,590,094	26,872,930	14,804,502,212	826	179,022,000,000	26,989,000	14,982,000,000	822
40	367,619	606,024,686,604	81,333,015	34,728,255,161	1,045	607,982,000,000	81,807,000	35,133,000,000	1,063
41	43,765	67,312,100,027	223,975,216	47,819,787,771	147	71,137,000,000	235,833,000	52,155,000,000	157
43	402,700	1,445,472,685,610	405,513,979	79,203,365,448	383	1,447,781,000,000	406,212,000	79,815,000,000	383

Table B3: Comparison with Weighted PUF Tabulations and Published CFS Estimates - Origin State

Origin State	Number of PUF Records	PUF Tabulations - Weighted				Published Estimates			
		VALUE ($)	WGHT (tons)	Ton-Miles	Avg miles/ shipment	Shipment Value ($)	Shipment Weight (tons)	Ton-Miles	Avg miles/ shipment
Total	5,978,523	14,517,252,205,223	12,468,926,874	3,117,472,208,914	666	14,517,812,000,000	12,468,902,000	3,116,876,000,000	679
00	31	224,082,457	546,263	87,596,500	219				
01	113,260	235,470,008,972	202,727,400	54,407,336,595	494	235,467,000,000	202,724,000	54,399,000,000	485
02	18,103	19,175,765,901	21,517,174	4,268,576,208	985	19,171,000,000	21,512,000	4,266,000,000	1,021
04	89,645	180,506,705,457	114,482,903	20,647,527,794	1,010	180,489,000,000	114,473,000	20,626,000,000	996
05	55,480	116,378,928,397	142,063,049	32,052,535,182	402	116,384,000,000	142,063,000	32,044,000,000	400
06	489,963	1,666,624,876,638	779,955,104	193,264,267,494	1,057	1,666,672,000,000	779,935,000	193,193,000,000	1,090
08	84,636	173,636,174,455	152,047,900	48,358,374,780	553	173,655,000,000	152,040,000	48,345,000,000	548
09	93,825	189,579,601,420	89,277,979	9,869,878,895	508	189,712,000,000	89,278,000	9,861,000,000	509
10	27,688	55,782,521,374	29,457,753	5,044,229,377	395	55,781,000,000	29,456,000	5,041,000,000	380
11	3,394	2,296,191,441	2,730,979	104,916,246	144	2,296,000,000	2,731,000	105,000,000	S
12	213,606	525,167,636,764	452,804,494	62,571,815,967	459	525,179,000,000	452,773,000	62,542,000,000	488
13	175,271	476,244,946,826	276,406,111	68,650,653,494	502	476,321,000,000	276,623,000	68,634,000,000	501
15	34,735	23,139,145,959	27,616,575	908,855,617	679	23,139,000,000	27,615,000	908,000,000	677
16	39,554	50,642,689,536	58,912,928	23,242,229,125	555	50,642,000,000	58,912,000	23,237,000,000	564
17	237,389	803,691,463,179	674,576,530	188,862,178,944	492	803,696,000,000	674,575,000	188,827,000,000	488
18	189,731	438,148,963,595	416,174,530	97,341,070,503	683	438,158,000,000	416,175,000	97,322,000,000	686
19	103,331	212,450,053,121	325,800,744	90,967,684,738	463	212,449,000,000	325,795,000	90,961,000,000	466
20	99,623	189,524,110,928	220,834,499	42,495,490,977	362	189,529,000,000	220,836,000	42,489,000,000	359
21	114,495	251,494,913,248	249,172,895	76,862,959,628	655	251,495,000,000	249,178,000	76,848,000,000	654
22	92,928	280,849,074,397	507,800,087	141,607,119,279	266	280,857,000,000	507,846,000	141,606,000,000	270
23	34,935	38,040,320,680	39,151,196	8,023,028,715	531	38,040,000,000	39,152,000	8,021,000,000	539
24	91,174	156,407,226,780	118,433,246	14,766,359,944	345	156,408,000,000	118,429,000	14,756,000,000	343
25	116,768	272,094,910,913	134,425,969	19,992,743,157	761	272,093,000,000	134,415,000	19,976,000,000	747
26	198,103	547,721,412,000	361,446,944	63,994,376,886	446	547,720,000,000	361,459,000	63,996,000,000	448
27	156,939	302,418,205,886	376,375,109	159,513,676,764	624	302,418,000,000	376,383,000	159,490,000,000	618
28	51,129	140,969,084,493	99,104,945	30,819,524,764	503	141,191,000,000	99,111,000	30,814,000,000	508
29	145,770	282,849,938,274	245,307,573	71,168,371,550	671	282,849,000,000	245,309,000	71,149,000,000	667
30	27,495	26,707,263,356	82,082,972	54,253,807,078	426	26,708,000,000	82,093,000	54,246,000,000	424
31	65,571	109,637,245,299	186,989,938	50,932,021,482	524	109,637,000,000	186,987,000	50,923,000,000	527
32	57,230	60,656,294,264	40,646,206	10,640,155,771	831	60,657,000,000	40,647,000	10,638,000,000	822
33	50,314	50,783,850,694	35,843,327	3,752,782,492	891	50,783,000,000	35,843,000	3,753,000,000	894
34	144,356	464,643,363,292	205,200,644	31,732,415,760	495	464,667,000,000	205,201,000	31,720,000,000	493
35	26,971	33,942,262,159	57,684,171	12,575,990,875	340	33,943,000,000	57,687,000	12,575,000,000	327
36	240,051	590,511,700,679	321,130,671	45,427,712,217	614	590,502,000,000	321,123,000	45,414,000,000	611
37	189,799	439,160,530,796	235,891,776	46,949,244,432	642	439,152,000,000	235,893,000	46,940,000,000	645
38	30,783	44,879,329,867	126,514,785	41,667,679,775	427	44,881,000,000	126,504,000	41,669,000,000	437
39	276,589	609,253,384,216	499,626,998	93,152,739,691	600	609,258,000,000	499,632,000	93,129,000,000	604
40	93,396	133,797,485,208	174,326,896	36,865,161,654	294	133,794,000,000	174,326,000	36,860,000,000	303
41	93,606	152,625,982,327	127,982,181	33,361,222,175	988	152,627,000,000	127,991,000	33,355,000,000	985
42	255,438	631,814,143,967	429,544,932	80,005,458,658	599	631,829,000,000	429,538,000	79,986,000,000	603
44	27,106	46,084,229,014	19,843,885	2,182,391,142	815	46,091,000,000	19,847,000	2,183,000,000	821
45	109,153	211,623,059,164	127,311,085	32,150,805,204	492	211,596,000,000	127,312,000	32,147,000,000	492
46	34,295	37,278,721,249	79,789,863	35,600,533,813	418	37,278,000,000	79,792,000	35,601,000,000	418
47	164,053	405,475,524,358	256,499,469	57,985,571,224	781	405,479,000,000	256,508,000	57,986,000,000	784
48	398,992	1,635,918,708,972	1,860,234,284	318,109,713,561	377	1,635,873,000,000	1,860,241,000	318,055,000,000	375
49	70,288	130,797,962,768	109,248,034	30,091,866,902	1,181	130,801,000,000	109,253,000	30,106,000,000	1,169
50	24,939	24,365,268,358	16,117,956	5,652,849,265	528	24,365,000,000	16,118,000	5,652,000,000	538
51	140,008	261,892,135,646	251,229,151	45,538,048,737	495	262,074,000,000	251,440,000	45,533,000,000	502
53	153,930	373,965,819,313	255,110,376	54,281,080,966	1,116	374,102,000,000	255,112,000	54,267,000,000	1,219
54	35,151	57,078,030,122	195,071,422	45,585,920,573	221	57,077,000,000	195,082,000	45,588,000,000	227
55	179,551	331,629,486,308	353,240,816	95,261,358,959	615	331,625,000,000	353,313,000	95,261,000,000	614
56	17,952	21,201,470,740	302,614,161	323,822,297,385	304	21,202,000,000	302,620,000	323,833,000,000	310

Comparison of Published CVs and CVs Produced Using the Public Use File GVF
for Selected Shipment Characteristics

Table C1: Comparison of GVF CVs with Published CFS CVs - Mode

Mode	PUF GVF CVs				Published CVs			
	VALUE	WGHT	Ton-Miles	Avg miles/ shipment	Shipment Value	Shipment Weight	Ton-Miles	Avg miles/ shipment
Total	0.63	1.46	1.86	3.91	1.0	1.3	1.8	3.4
00	23.06	31.26	33.36	7.95				
02	11.10	17.81	19.26	6.11				
03	24.09	32.25	34.42	21.36				
04	1.03	2.26	2.78	5.34	1.5	2.7	1.7	5.6
05	1.17	2.53	3.09	12.52	1.2	1.6	1.9	2.2
06	7.11	12.33	13.57	6.58	3.9	5.2	4.4	5.5
07	30.12	37.52	40.18	11.76				
08	13.45	20.77	22.34	12.12	7.0	7.7	6.9	17.4
09	32.61	39.43	42.33	14.09	31.0	34.9	34.8	6.8
10	17.34	25.30	27.06	10.20	7.8	10.7	13.9	22.2
101	30.89	38.12	40.85	8.72	28.8	23.8	21.3	27.6
11	4.40	8.19	9.22	4.13	2.5	8.0	11.9	1.4
12	12.76	19.91	21.45	22.86	7.8	7.4	S	S
13	11.14	17.85	19.31	7.12				
14	1.26	2.71	3.29	3.83	1.8	2.8	2.5	2.7
15	6.30	11.13	12.32	4.78	3.4	6.4	4.9	2.3
16	5.89	10.52	11.68	5.44	2.8	7.1	5.1	10.9
17	15.07	22.71	24.35	6.55	17.5	8.8	13.0	9.7
18	15.90	23.68	25.36	5.56	8.7	16.0	13.6	6.9
19	27.33	35.19	37.60	122.42	14.7	22.8	15.2	40.8
20	17.53	25.51	27.28	6.43				

Table C2: Comparison of GVF CVs with Published CFS CVs - Commodity

SCTG	PUF GVF CVs				Published CVs			
	VALUE	WGHT	Ton-Miles	Avg miles/ shipment	Shipment Value	Shipment Weight	Ton-Miles	Avg miles/ shipment
Total	0.63	1.46	1.86	3.91	1.0	1.3	1.8	3.4
00	23.06	31.26	33.36	7.95				
01-05	17.31	25.28	27.04	7.96				
01	14.04	21.48	23.08	6.58	29.9	32.4	26.5	12.3
02	6.55	11.51	12.71	10.87	2.5	1.8	8.2	17.8
03	4.70	8.68	9.74	6.23	4.8	4.4	7.4	11.1
04	4.95	9.07	10.16	6.34	2.9	5.9	6.4	19.6
05	4.23	7.93	8.94	9.18	2.1	2.3	4.6	17.6
06-09	17.84	25.86	27.65	9.32				
06	4.35	8.11	9.13	9.17	3.2	5.8	7.2	16.8
07	2.86	5.63	6.50	6.41	1.7	3.1	2.7	12.0
08	3.63	6.94	7.89	8.76	2.4	3.3	7.9	17.1
09	8.36	14.11	15.42	5.39	15.6	24.9	15.8	9.1
10-14	17.14	25.09	26.84	8.06				
10	10.98	17.65	19.10	9.95	12.7	14.6	12.1	18.5
11	6.29	11.12	12.30	10.50	14.0	6.9	14.0	20.6
12	4.29	8.02	9.04	16.90	7.2	7.2	12.3	8.3
13	6.85	11.95	13.17	8.76	6.6	12.4	8.8	14.5
14	11.99	18.94	20.44	7.12	9.8	19.4	37.1	13.0
15-19	18.91	27.02	28.86	9.68				
15	10.62	17.18	18.61	16.42	4.4	5.2	6.7	20.7
17	5.33	9.66	10.78	17.20	5.4	6.1	7.4	10.6
18	4.63	8.56	9.62	17.91	4.5	4.2	11.8	10.6
19	3.58	6.85	7.80	13.18	6.2	5.0	10.1	9.9
20-24	15.94	23.72	25.40	6.72				
20	3.81	7.24	8.22	6.43	2.6	5.1	6.2	17.9
21	3.74	7.11	8.08	5.51	5.9	10.8	16.7	6.4
22	6.81	11.89	13.11	13.49	4.9	5.7	7.6	13.4
23	3.23	6.26	7.17	4.72	4.7	5.8	6.3	6.7
24	2.57	5.12	5.94	4.84	1.7	3.8	3.5	16.4
25-30	15.88	23.65	25.33	6.88				
25	12.63	19.75	21.28	13.28	14.8	14.9	15.2	16.6
26	3.16	6.14	7.04	6.69	1.3	1.7	2.7	14.9
27	4.73	8.72	9.79	8.14	5.0	7.2	13.8	7.0
28	4.11	7.72	8.73	5.84	3.3	4.5	6.0	10.0
29	3.14	6.11	7.01	5.96	5.5	6.5	4.4	12.9
30	2.68	5.32	6.16	4.17	2.3	5.0	3.3	3.4
31-34	17.49	25.48	27.24	6.24				
31	3.20	6.22	7.13	5.71	2.5	3.1	6.5	11.8
32	3.02	5.91	6.79	6.21	1.9	2.9	3.1	8.3
33	2.82	5.55	6.41	5.43	2.8	5.7	9.1	6.3
34	2.50	5.01	5.82	5.84	1.2	3.7	4.8	3.3
35-38	17.90	25.92	27.71	6.84				
35	2.38	4.80	5.59	4.71	2.0	2.6	4.7	7.7
36	2.69	5.33	6.17	5.75	3.9	7.9	5.7	4.5
37	5.55	9.99	11.12	5.13	3.4	14.4	17.0	6.0
38	3.58	6.85	7.80	4.70	3.4	13.5	15.1	4.7
39-43	17.88	25.90	27.69	6.00				
39	3.89	7.36	8.35	4.96	5.7	4.0	5.0	4.6
40	2.47	4.95	5.76	4.13	2.6	8.2	5.7	3.4
41	5.90	10.53	11.69	10.78	4.6	4.9	4.8	7.2
43	2.37	4.78	5.57	6.11	3.5	3.1	2.6	5.3

Table C3: Comparison of GVF CVs with Published CFS CVs - Origin State

Origin State	PUF GVF CVs				Published CVs			
	VALUE	WGHT	Ton-Miles	Avg miles/ shipment	Shipment Value	Shipment Weight	Ton-Miles	Avg miles/ shipment
Total	0.63	1.46	1.86	3.91	1.0	1.3	1.8	3.4
00	38.59	43.34	46.98	16.92				
01	4.07	7.66	8.67	6.15	2.8	6.9	7.6	12.7
02	8.11	13.77	15.06	5.45	12.9	16.9	23.8	30.4
04	4.47	8.31	9.35	4.72	2.8	13.4	11.0	4.3
05	5.39	9.76	10.88	7.08	3.3	8.8	8.5	9.9
06	2.17	4.42	5.18	4.02	1.2	2.6	6.0	5.2
08	4.58	8.47	9.52	6.02	2.9	6.1	13.2	3.2
09	4.39	8.18	9.21	6.18	5.3	8.9	10.9	6.7
10	6.98	12.14	13.37	7.56	14.3	15.5	21.2	15.6
11	13.86	21.27	22.86	13.48	16.1	49.6	46.2	S
12	3.13	6.09	6.99	6.00	3.5	6.7	7.6	8.5
13	3.40	6.55	7.48	5.89	3.4	4.5	2.8	5.3
15	6.43	11.33	12.52	5.98	6.0	12.3	27.9	24.9
16	6.13	10.88	12.05	6.41	3.8	5.7	6.7	19.8
17	2.99	5.86	6.74	5.79	2.5	2.8	6.7	4.4
18	3.29	6.37	7.28	5.17	4.6	4.3	6.4	4.2
19	4.23	7.91	8.93	6.36	3.7	3.4	4.8	9.1
20	4.29	8.01	9.04	7.03	5.3	5.2	7.5	15.0
21	4.05	7.63	8.63	5.49	6.7	6.5	15.7	7.6
22	4.41	8.21	9.24	8.00	4.5	5.7	7.6	17.3
23	6.42	11.31	12.50	6.59	2.9	14.1	19.4	19.9
24	4.44	8.26	9.30	7.22	4.2	8.9	11.7	9.9
25	4.02	7.58	8.58	5.16	3.0	10.5	19.4	10.0
26	3.23	6.27	7.17	6.11	7.7	14.1	10.2	3.8
27	3.56	6.82	7.77	5.45	4.6	10.9	14.2	6.0
28	5.56	10.02	11.15	6.52	8.8	9.1	7.4	9.3
29	3.67	7.01	7.97	5.33	6.6	6.9	13.3	7.4
30	7.00	12.17	13.40	7.34	6.7	10.8	14.1	16.5
31	5.06	9.23	10.33	6.29	4.1	7.4	9.7	11.4
32	5.33	9.66	10.77	5.29	5.8	11.2	14.8	13.3
33	5.60	10.07	11.21	5.20	5.5	12.4	10.2	8.4
34	3.69	7.03	7.99	6.02	3.9	10.7	7.8	5.6
35	7.05	12.24	13.47	8.05	7.1	14.1	25.2	26.0
36	2.98	5.83	6.71	5.29	1.6	7.8	7.6	3.0
37	3.29	6.36	7.28	5.30	3.4	5.3	2.7	5.1
38	6.72	11.76	12.97	7.27	7.3	9.1	17.0	23.1
39	2.80	5.53	6.38	5.28	3.4	6.2	4.3	4.8
40	4.40	8.19	9.23	7.68	4.5	5.3	4.2	19.2
41	4.40	8.19	9.22	4.74	4.1	8.6	6.3	7.1
42	2.90	5.70	6.56	5.32	4.6	5.3	10.1	4.8
44	7.04	12.22	13.45	5.68	12.6	22.1	10.2	10.2
45	4.13	7.76	8.77	6.18	4.0	10.3	9.4	7.1
46	6.46	11.37	12.57	7.26	5.0	11.3	11.1	15.4
47	3.50	6.71	7.65	4.97	6.5	4.7	8.2	5.4
48	2.38	4.80	5.59	6.16	2.4	5.7	5.5	11.1
49	4.92	9.02	10.10	4.52	3.5	9.1	8.9	4.1
50	7.25	12.53	13.78	6.80	5.8	12.1	27.2	14.0
51	3.73	7.11	8.08	6.03	5.3	10.2	13.2	8.1
53	3.59	6.87	7.82	4.33	2.3	7.4	7.2	8.0
54	6.40	11.28	12.48	9.34	6.3	6.6	15.2	10.7
55	3.37	6.50	7.42	5.42	2.3	14.3	17.6	3.1
56	8.14	13.80	15.10	8.70	5.7	6.3	9.1	12.5